

EXHIBIT F



Report of Fletcher G. Driscoll, Ph.D.

In the matter of:

City of New York,
Plaintiff

Case No. 04-Civ-3417

vs.

Amerada Hess Corp., et al.,
Defendants

March 9, 2009

Prepared by
Fletcher Driscoll & Associates LLC

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- Implement a Centralized Monitoring Program for release detection at Police, Fire, and Transportation Department USTs,
- Submit quarterly status reports to the USEPA regarding the Centralized Monitoring Program, and
- Submit quarterly status reports regarding compliance with tank requirements.

In summary, the Consent Orders and Complaints by USEPA and NYSDEC demonstrate that New York City failed to properly manage its UST network during the period of peak MTBE use in New York. Because the City failed to implement various UST upgrades and leak detection requirements, numerous MTBE releases were probably not detected in a timely fashion.

At least 19 confirmed or highly likely releases of MTBE to groundwater have occurred at publicly-owned sites in and near the JWS service area.

Plaintiff expert, David Terry, modeled forty-two sites with potential MTBE releases in the vicinity of the focus wells. Only one city-owned and three publicly-owned sites, however, were included in his models. But, based on a review of the City's bi-monthly status reports submitted to NYSDEC, other lists of City USTs, and documents provided by the City in relation to this case, there are at least 68 known spill sites at publicly-owned facilities in Queens (Figure 2-1 and Table 2-1). Thirty-two sites within Terry's model area were reviewed to determine if they were confirmed, likely, possible, or unlikely sources of MTBE in groundwater.¹¹ At least 18 City-owned sites and one other publicly-owned site have had confirmed or likely releases of MTBE to groundwater within the area modeled by Terry (Figure 2-2 and Table 2-2).^{12,13} No groundwater data and minimal site information are available for review for 12 city-owned sites, precluding a definitive determination of the degree of possible MTBE contamination at these

¹¹ Sites with groundwater analytical data, consultant reports, or NYSDEC spill reports indicating MTBE was detected in groundwater were classified as "confirmed." Sites with reported gasoline releases and groundwater contamination, but no confirmed MTBE detections (because site data were unavailable for review) were classified as "likely." Sites with gasoline releases that affected soil, but had no confirmed groundwater contamination were classified as "possible." Sites which had small releases, types of releases less likely to contain significant mass of MTBE (e.g. fuel oil, waste oil), or confirmed absence of MTBE in groundwater samples were classified as "unlikely."

¹² One of the confirmed MTBE sites, the Jamaica Bus Depot, may be affected by MTBE from an upgradient source.

¹³ Terry modeled two additional publicly-owned sites as sources of MTBE, but these sites were considered unlikely sources in this analysis because of minimal evidence of significant releases or groundwater contamination. Cohen and Bell (2009) identified a third publicly-owned site as a potential source of the MTBE found in Well 45, but there was no confirmed groundwater contamination at that site.

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sites. It is indefensible that Terry ignored 17 publicly-owned facilities within his model area where MTBE releases to groundwater were confirmed or likely.

The City in most cases failed to investigate and delineate their MTBE plumes properly to ensure that there was no off-site contamination.

A review of the available documentation for these publicly-owned sites found confirmed MTBE releases to groundwater were not properly investigated or documented in many cases. Usually little information was available regarding the volume of release, and in most cases off-site investigations were not conducted even if required by NYSDEC. Off-site investigations were confirmed to have occurred at only two of the City-owned sites reviewed.¹⁴ At the 113th Police Precinct the City refused to comply with NYSDEC requests in March 1998, March 1999, and October 2007 to conduct an off-site investigation to delineate the City's MTBE plume, stating that "It has been the stated policy of the City of New York that we will not perform any borings or test wells on privately owned property" (NYSDEC, 1998; NYSDEC, 1999; NYC Department of Design and Construction [NYCDDC], 1999).

The City's response to spills at their MTBE-contaminated sites was often slow and remediation inadequate to prevent off-site migration of MTBE plumes.

In 1997 a petroleum release was discovered at the Jamaica Station 24 property, located approximately one-half mile northeast of the Station 6 focus wells. MTBE and other gasoline constituents were detected in soil and groundwater samples in October 1997. Subsequently three gasoline USTs and two diesel USTs were removed in December 1997 (URS Greiner, 1997).¹⁵ MTBE Concentrations in groundwater were as high as 11,000 micrograms per liter ($\mu\text{g/L}$) in 1997 and 31,000 $\mu\text{g/L}$ in 1998 in monitoring wells near the former tank locations. Despite these high concentrations of MTBE, which indicated the potential for a substantial off-site plume, the City did not sample groundwater downgradient of the source area at that time. In fact, none of the wells were apparently sampled again until October 2003, nearly five years later, when MTBE was detected at a concentration of 180 $\mu\text{g/L}$ in a newly installed monitoring well at the downgradient property boundary (Shaw, 2005). This result clearly indicates that a MTBE plume with concentrations above the New York State Department of Health (NYSDOH) maximum

¹⁴ These sites were the Glendale Repair Yard and the Queens South 13B sites.

¹⁵ Two of the gasoline tanks had last passed tank tightness tests in 1989, while the other had been closed in place in 1985.

Table 2-2. Spill Sites at Publicly-Owned Facilities within Terry's Model Area

Owner	Site Name	Site Address	Confirmed MTBE in GW?	Max MTBE Conc. (ug/L)	Year	Note	Reference
City	102nd Precinct	87-34 118th St.	Confirmed	19	1997		CNY-DEC-000722
City	103rd Precinct	168-02 91 Ave	Confirmed	360	1996		CNY-DEC-000569
City	112th Precinct	68-40 Austin St	Confirmed	4,000	1996		CNY-DEC-001037
City	113th Precinct	167-02 Baisley Blvd.	Confirmed	35,000	1999		CNY-DEC-000368
City	Cunningham Park Garage	199-02 Union Turnpike	Confirmed	330	1995	Spill report	CNY-DEC-000049
City	Douglasston Pumping Station	65-10 Douglasston Parkway	Confirmed			Diesel	Spill 9602603
City	Engine Company 266	92-20 Rockaway Blvd	Unlikely			2 gallon diesel release	
City	Engine Company 301	91-02 197th St	Unlikely			Fuel oil	
City	Engine Company 302	143-15 Rockaway Blvd	Unlikely			5 gallons fuel oil	
City	Engine Company 317	117-11 196th St	Unlikely				
City	Engine Company 324	108-01 Horace Harding Exp	Confirmed	17	1997		CNY-DEC-000817
City	Engine Company 326	64-04 Springfield Blvd	Confirmed	>50			CNY-DEC-000658
City	Family Court House	151-20 Jamaica Ave	Unlikely			Diesel	
City	Forest Park Garage	88th Place and Myrtle Ave	Possible			1996 gasoline release	
City	Glendale Repair Yard	88-25 70th Rd	Confirmed	51,000	1997		NYC2_0091572
City	Highway Patrol Precinct #3	198-15 Grand Central Parkway	Confirmed	69	1993		NYC2_0043271
City	Jamaica Bay Water Control	150-20 134th St	Unlikely			Fuel oil	
MTA	Jamaica Bus Depot	165-18 South Rd	Confirmed			Possible offsite source	NYC2_0091608
City	Jamaica Water Supply Station #24	107-17 178th St.	Confirmed	31,000	1998	Fuel oil	
City	Jamaica Water Supply Station #31	127-15 92nd Ave	Unlikely			1990 gasoline release-Modeled by Terry	
MTA	LIRR-Hillside Support Facility	93-59 183rd St	Possible*			1995 gasoline release-Cohen listed as potential source	
MTA	LIRR-Morris Park Yard	91-53 121st St	Possible			Small gasoline-Modeled by Terry	Spill 9602604
NYS	NY State Armory	93-05 168th St	Unlikely*			Limited Data	NYC2_0073167
City	Q4 Yard	149-40 134th St	Confirmed	6	2007	Spill report	
City	Queens East 10	130-23 150th Ave.	Confirmed			1995 gasoline release	
City	Queens East 12 Garage	130-23 150th Ave.	Likely				
City	Queens East 12A (was South A)	170-37 Douglas Ave.	Unlikely			Not Detected	
City	Queens Hospital Center EMS	82-68 164th St	Likely			1995 gasoline release	
City	Queens 8 Garage	130-23 150th Ave.	Likely			1994 gasoline release	
City	Queens South 13B	153-67 146th Ave	Confirmed	No pre-2007 data	2000		NYC2_0082883
City	Queens West 9	132-05 Atlantic Ave	Unlikely	7,000		Waste oil	
City	Third Ward Yard	49-14 Fresh Meadow Lane	Confirmed	Not Detected		Spill report	Spill 9602602

* Terry modeled site as having MTBE release

Confirmed: MTBE reported detected in groundwater (data table, consultant report, or spill report)
Likely: Groundwater confirmed affected by gasoline, but no MTBE data available for confirmation
Possible: Gasoline release in 1990s, but no confirmation that groundwater affected
Unlikely: Spill size or type makes less likely that MTBE affected groundwater

MTA- Metropolitan Transit Authority
NYS- New York State

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